ARCHAEOLOGICAL DESKTOP STUDY

for the Application of a Prospecting Right on Several Portions of the Farm Deelkraal 142 IQ, Carletonville, Gauteng

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Project Name: NTM - Deelkraal 10692PR

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- I, Tobias Coetzee, declare that –
- I act as the independent specialist;
- I am conducting any work and activity relating to the proposed National Treasure Minerals (Pty) Ltd Project in an objective manner, even if this results in views and findings that are not favourable to the client;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have the required expertise in conducting the specialist report and I will comply with legislation, regulations and any guidelines that have relevance to the proposed activity;
- I have not, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this declaration are true and correct.

Date: 26 July 2021

Executive Summary

The author was appointed by Eco Elementum (Pty) Ltd to undertake an Archaeological Desktop study for National Treasure Minerals (Pty) Ltd on the listed Farm Portions (**Table 1)** within the Merafong City Local Municipality in the Gauteng Province. The study area is located roughly 15 km southwest of Carletonville. The aim of this report is to contextualise the general study area in terms of heritage resources and will provide the developers with general information regarding potentially sensitive areas. This will also shed light on what is to be expected during a Phase 1 Archaeological Impact Assessment and aid in interpreting finds.

A total of 27 sites consisting of 11 areas associated with buildings, 12 with huts and 4 with ruins were noted on historical topographical maps and aerial imagery (**Table 2**). Based on contemporary satellite imagery, seven of these sites are associated with surface remains, while the remaining 20 appear to have been demolished as no surface remains are visible on satellite imagery. Although no surface remains are evident, subsurface culturally significant material might still be present. All the identified sites appear to exceed 60 years of age and are therefore considered significant form a heritage perspective. These sites should be avoided by the proposed prospecting activities. The 500 m River and gradient buffer areas are also considered potentially sensitive from a heritage perspective and care should be exercised when prospecting within these areas. A full Phase 1 AIA (Archaeological Impact Assessment) must be done should any development that triggers an AIA result from the prospecting project, including if the cumulative impact of the proposed prospecting exceeds 0.5 ha.

List of Abbreviations

AIA – Archaeological Impact Assessment

CRM – Cultural Resource Management

DMR – Department of Mineral Resources

EIA – Environmental Impact Assessment

ESA – Early Stone Age

ha – Hectare

HIA – Heritage Impact Assessment

km – Kilometre

LIA – Late Iron Age

LSA – Later Stone Age

m – Metre

MASL – Metres Above Sea Level

MEC – Member of the Executive Council

MSA – Middle Stone Age

NHRA – National Heritage Resources Act

SAHRA – South African Heritage Resources Agency

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1. Project Background

1.1 Introduction

Eco Elementum (Pty) Ltd appointed the author to undertake an Archaeological Desktop study for National Treasure Minerals (Pty) Ltd on 12 farm portions of the Farm Deelkraal 142 IQ within the Merafong City Local Municipality in the Gauteng Province. The study area is located roughly 15 km southwest of Carletonville (**Figure 1**) and the identified farm portions are listed in **Table 1**. The purpose of this study is to contextualise the demarcated study area in order to determine the scope of heritage resources that might be encountered during the prospecting phase and subsequent heritage studies, as well as to provide recommendations for the safeguarding of archaeological resources during prospecting. The aim of this report is to provide the developer with information regarding heritage resources in the vicinity of the study area based on results from previous studies, written historical information and historical topographical maps and aerial photographs.

In the following report, a broad overview of the proposed prospecting is provided and the study area is contextualised in terms of heritage resources. The prospecting application is for iron ore. The legislation section included serves as a guide towards the effective identification and protection of heritage resources and will apply to any such material unearthed during the prospecting phase.

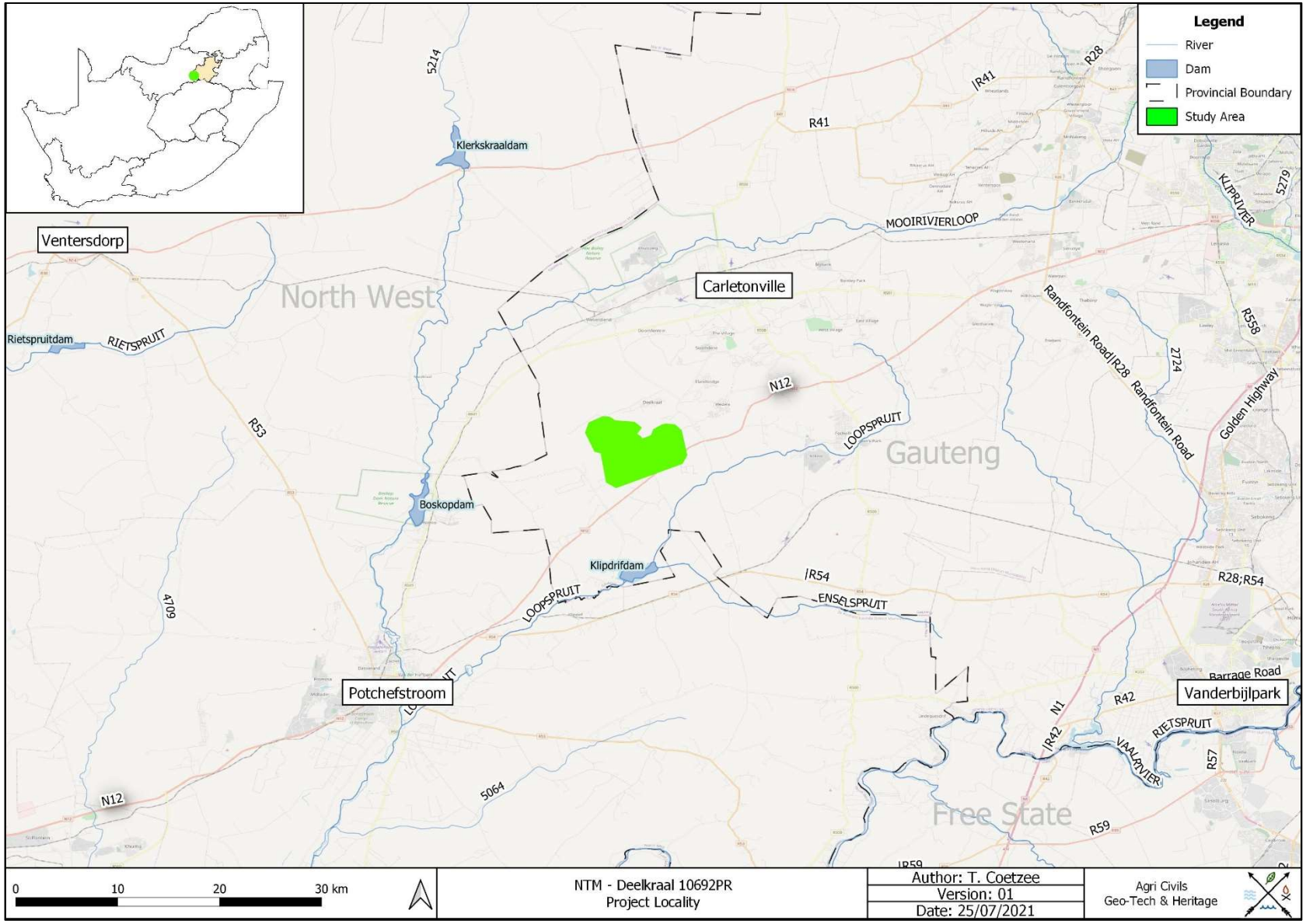

Figure 1: Regional and provincial location of the study area.

1.2 Legislation

The South African Heritage Resources Agency (SAHRA) aims to conserve and control the management, research, alteration and destruction of cultural resources of South Africa and to prosecute if necessary. It is therefore crucially important to adhere to heritage resource legislation contained in the Government Gazette of the Republic of South Africa (Act No.25 of 1999), as many heritage sites are threatened daily by development. Conservation legislation requires an impact assessment report to be submitted for development authorisation that must include an AIA if triggered.

Archaeological Impact Assessments (AIAs) should be done by qualified professionals with adequate knowledge to (a) identify all heritage resources that might occur in areas of development and (b) make recommendations for protection or mitigation of the impact of the sites.

1.2.1 The EIA (Environmental Impact Assessment) and AIA processes

Phase 1 Archaeological Impact Assessments generally involve the identification of sites during a field survey with assessment of their significance, the possible impact that the development might have, and relevant recommendations.

All Archaeological Impact Assessment reports should include:

a. Location of the sites that are found;

b. Short descriptions of the characteristics of each site;

c. Short assessments of how important each site is, indicating which should be conserved and which mitigated;

d. Assessments of the potential impact of the development on the site(s);

e. In some cases a shovel test, to establish the extent of a site, or collection of material, to identify the associations of the site, may be necessary (a pre-arranged SAHRA permit is required); and

f. Recommendations for conservation or mitigation.

This AIA report is intended to inform the client about the legislative protection of heritage resources and their significance and make appropriate recommendations. It is essential to also provide the heritage authority with sufficient information about the sites to enable the authority to assess with confidence:

a. Whether or not it has objections to a development;

b. What the conditions are upon which such development might proceed;

c. Which sites require permits for mitigation or destruction;

d. Which sites require mitigation and what this should comprise;

e. Whether sites must be conserved and what alternatives can be proposed to relocate the development in such a way as to conserve other sites; and

f. What measures should or could be put in place to protect the sites which should be conserved.

When a Phase 1 AIA is part of an EIA, wider issues such as public consultation and assessment of the spatial and visual impacts of the development may be undertaken as part of the general study and may not be required from the archaeologist. If, however, the Phase 1 project forms a major component of an AIA it will be necessary to ensure that the study addresses such issues and complies with Section 38 of the National Heritage Resources Act.

1.2.2 Legislation regarding archaeology and heritage sites

National Heritage Resource Act No.25 of April 1999

Buildings are among the most enduring features of human occupation, and this definition therefore includes all buildings older than 60 years, modern architecture as well as ruins, fortifications and Farming Community settlements. The Act identifies heritage objects as:

- objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects, meteorites and rare geological specimens;
- visual art objects;
- military objects;
- numismatic objects;
- objects of cultural and historical significance;
- objects to which oral traditions are attached and which are associated with living heritage;
- objects of scientific or technological interest;
- books, records, documents, photographic positives and negatives, graphic material, film or video or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996), or in a provincial law pertaining to records or archives;
- any other prescribed category.

With regards to activities and work on archaeological and heritage sites this Act states that:

"No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority." (34. [1] 1999:58)

and

"No person may, without a permit issued by the responsible heritage resources authority:

(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;

(b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;

(c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or

(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites."(35. [4] 1999:58)

and

"No person may, without a permit issued by SAHRA or a provincial heritage resources authority:

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

(b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority;

(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) and excavation equipment, or any equipment which assists in the detection or recovery of metals." (36. [3] 1999:60)

On the development of any area the gazette states that:

"…any person who intends to undertake a development categorised as:

(a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50m in length;

(c) any development or other activity which will change the character of a site-

i. exceeding 5000m² in extent; or

ii. involving three or more existing erven or subdivisions thereof; or

iii. involving three or more erven or divisions thereof which have been consolidated within the past five years; or

iv. the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10000m² in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development." (38. [1] 1999:62-64)

and

"The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:

(a) The identification and mapping of all heritage resources in the area affected;

(b) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;

(c) an assessment of the impact of the development on such heritage resources;

(d) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;

(e) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;

(f) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and

(g) plans for mitigation of any adverse effects during and after the completion of the proposed development." (38. [3] 1999:64)

Human Tissue Act and Ordinance 7 of 1925

The Human Tissues Act (65 of 1983) and Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925) protects graves younger than 60 years. These fall under the jurisdiction of the National Department of Health and the Provincial Health Departments. Approval for the exhumation and re-burial must be obtained from the relevant Provincial MEC as well as the relevant Local Authorities. Graves 60 years or older fall under the jurisdiction of the National Heritage Resources Act as well as the Human Tissues Act, 1983.

2. Study Area and Project Description

2.1 Location & Physical Environment

The National Treasure Minerals (Pty) Ltd project is situated on the properties listed in **Table 1 & Figure 2**.

Table 1: Property name & coordinates.

Property	Portion	Map Reference (1:50 000)	Lat (y)	Lon (x)	Estimated Prospecting Extent (ha)
Deelkraal 142 IQ	RE/2/142	2627CB & AD	-26.511886	27.310576	2677.72
Deelkraal 142 IQ	7/142	2627CB & AD	-26.502647	27.314166	
Deelkraal 142 IQ	8/142	2627AD	-26.495746	27.299668	
Deelkraal 142 IQ	9/142	2627CB & AD	-26.497555	27.339041	
Deelkraal 142 IQ	29/142	2627AD	-26.494980	27.289578	
Deelkraal 142 IQ	32/142	2627AD	-26.493797	27.286829	
Deelkraal 142 IQ	33/142	2627AD	-26.489979	27.286067	
Deelkraal 142 IQ	39/142	2627AD	-26.482573	27.287407	
Deelkraal 142 IQ	40/142	2627CB & AD	-26.510144	27.294022	
Deelkraal 142 IQ	41/142	2627CB & AD	-26.507985	27.329653	
Deelkraal 142 IQ	42/142	2627CB & AD	-26.500055	27.323483	
Deelkraal 142 IQ	43/142	2627AD	-26.486771	27.290494	

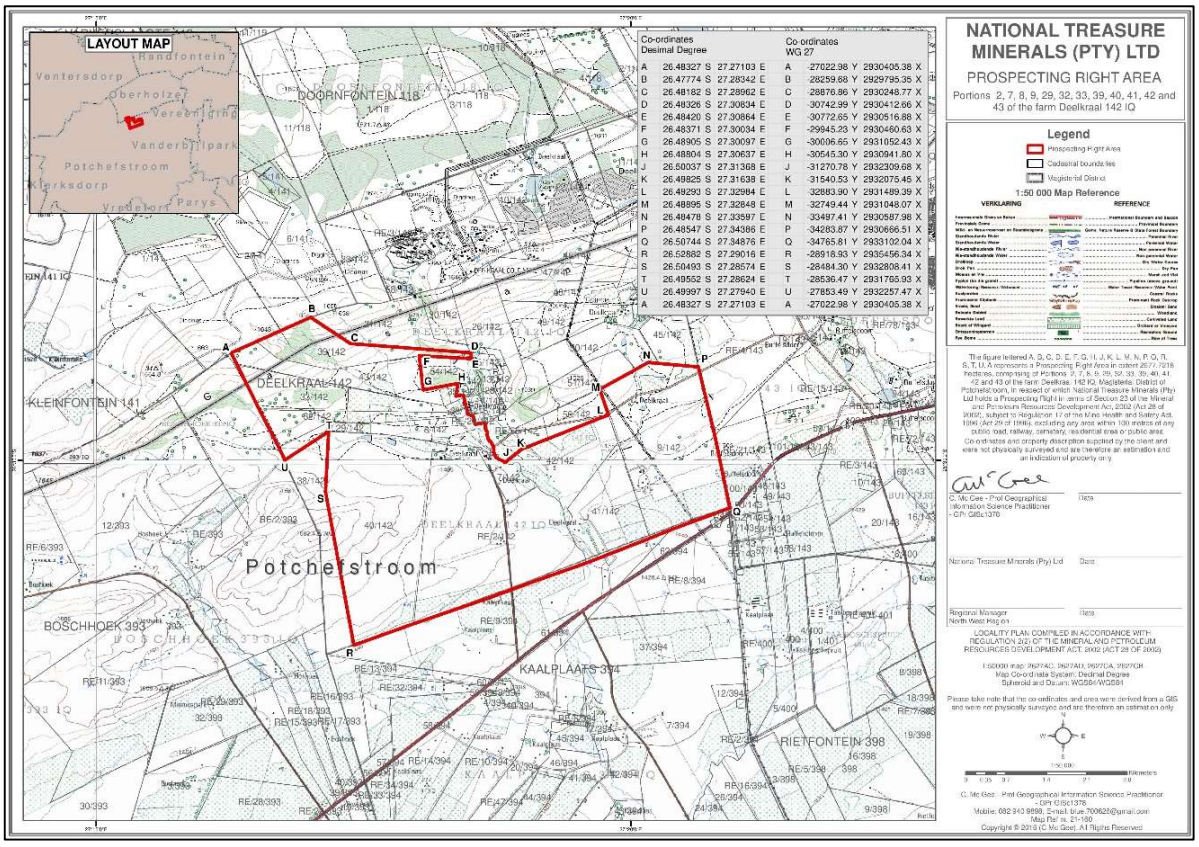

Figure 2: Proposed layout map (Provided by Eco Elementum 2021).

Carletonville is located roughly 15 km to the northeast of the proposed prospecting area, while Potchefstroom is located 29 km to the southwest and Ventersdorp 52 km to the west-northwest. The demarcated farm portions fall within the Merafong City Local Municipality and the West Rand District Municipality in the Gauteng Province. The N12 National Road runs in a northeast-southwest direction along the southern boundary of the study area, while the R501 secondary road runs in an east-west direction 8 km to the north.

In terms of vegetation, the majority of the study area falls within the Savanna Biome, Central Bushveld Bioregion and the Gauteng Shale Mountain Bushveld vegetation unit. A small section along the southern boundary falls within the Grassland Biome, Mesic Highveld Grassland Bioregion and the Rand Highveld Grassland vegetation unit. According to Mucina & Rutherfords (2006) Rand Highveld Grassland has a conservation status of endangered. The conservation target for this area is 24% and only a small portion is conserved in statutory and private conservation areas. Rand Highveld Grassland consists of the areas between rocky ridges from Pretoria to eMalahleni, extending onto ridges in the Stofberg and Roossenekal regions. Other localities include the area west of Krugersdorp, as well as the Potchefstroom and Derby surroundings. Almost 50% of this vegetation unit has been transformed by cultivation, plantations, urbanisation and the building of dams. Scattered alien invasive species are found in about 7% of the vegetation unit. Erosion in this area is moderate to high in only about 7% of the vegetation unit.

Gauteng Shale Mountain Bushveld, on the other hand, is found in the Gauteng and North West Provinces and occurs mainly on the ridge of the Gatsrand south of Carletonville, Westonaria and Lenasia. A narrow band also runs from a point between Tarlton and Magaliesberg to Klapperkop and the south-eastern area of Pretoria. In terms of conservation, Gauteng Shale Mountain Bushveld is considered vulnerable with a conservation target of 24%. Less than 1% is statutorily conserved and about 21% has been transformed mainly by urban built-up areas, mines and quarries, cultivation and plantations. Erosion generally varies between low and very low (Mucina & Rutherfords 2006).

According to Mucina & Rutherfords (2006), the average elevation for Rand Highveld Grassland ranges from 1300 to 1635 MASL (metres above sea level), while the elevation for Gauteng Shale Mountain Bushveld varies between 1300 and 1750 MASL. The average elevation of the study area is 1460 MASL and is associated with mountainous terrain in the west.

The study area falls within the summer rainfall region and the average annual rainfall is roughly 770 mm. The average annual temperature is 16.6 ºC. The average summer temperature is 20.7 ºC, while July is generally the coldest month (Climate-data.org accessed 26/07/2021).

The study area falls within in the C23J quaternary catchment of the Vaal Water Management Area. The closest perennial rivers to the study area are Loopspruit 3 km to the southeast and Mooirivierloop 13 km to the northwest. Several non-perennial streams are also found on all of the demarcated farm portions. The Klipdrif Dam is located approximately 9 km to the south of the study area and the Boskop Dam 17 km to the west-southwest.

Access to the demarcated areas appear to be through local roads turning from the N12 National Road. The majority of the study area appears to consist of unspoilt bushveld with a few patches of cultivated fields near the southern boundary. Buildings and structures are visible on the majority of the farm portions.

2.2 Project description

The prospecting right application for iron ore covers approximately 2677.72 ha (**Figures 3 & 4**). For the prospecting phase, however, several sites will be selected for geotechnical drilling. These boreholes and its associated activities will impact on a surface area of between 250 and 625 m². The full extent of the drill site will also be demarcated and no drilling will be done outside of the boundary.

Prospecting activities will include the following:

Current access roads will be used as far as possible, but in cases where access roads to drill sites do not exist, a single track will be selected based on the area where the least environmental impact will occur. The same

tracks will be used should repeated access be required. Vegetation and topsoil excavated during the drilling process will be stockpiled next to sumps where it will serve as a storm water diversion berm. On completion of the drilling process, the rehabilitated sumps will be backfilled with the stockpiled material. Because a constant water supply is needed for the drilling process, 15 000l will be stored in tanks. The plastic-lined sumps will be used to recycle water through a filter process in order to maintain a constant clean water source for the purpose of drilling. In terms of potable water for employees and workers, a temporary 260l tank will be placed on-site. Additional facilities will include temporary portable toilets, berms, and a maximum of 60m³ of diesel fuel located on an impermeable surface with bunds.

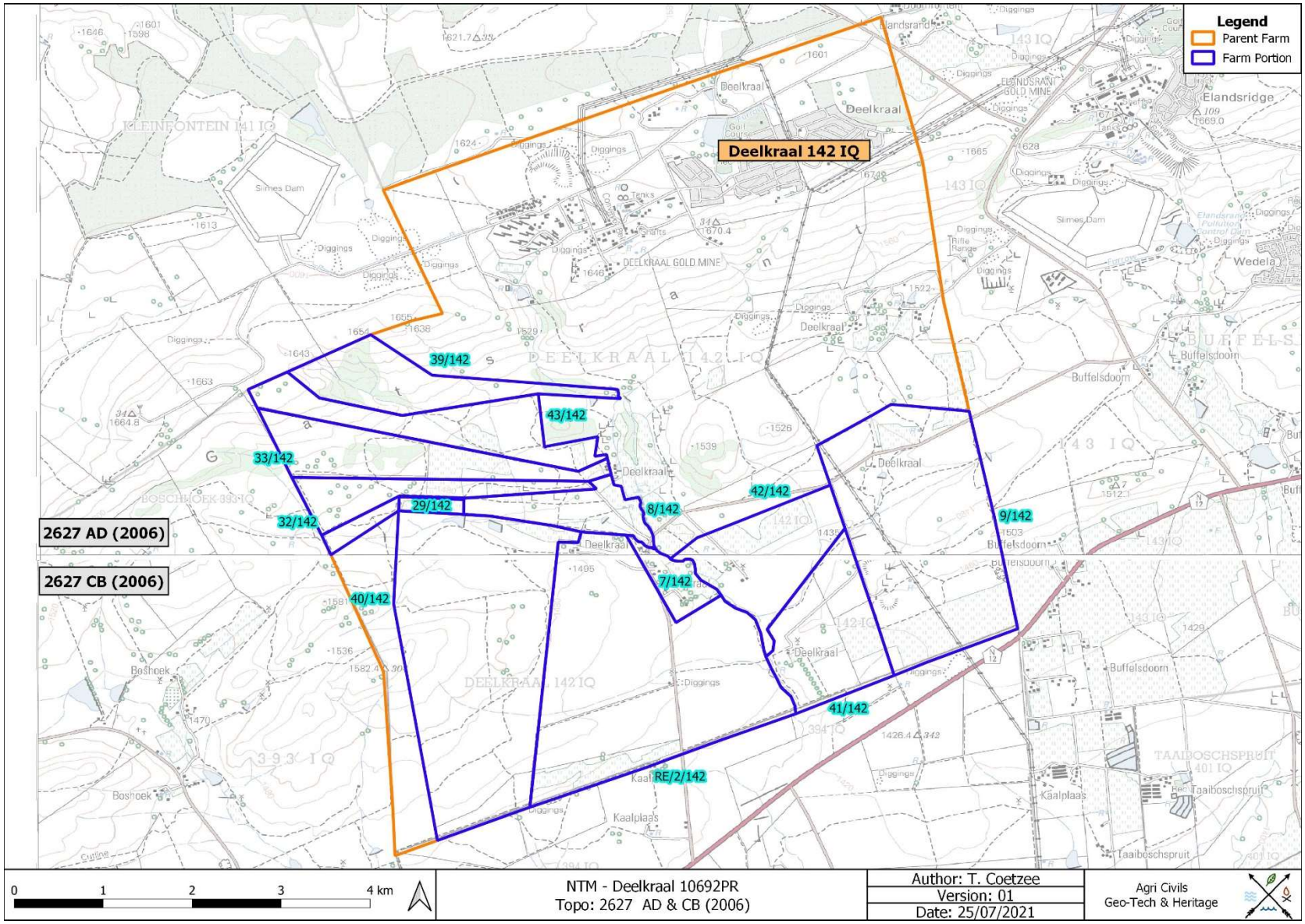

Figure 3: Segment of SA 1:50 000 2627 AD & CB indicating the area demarcated for prospecting.

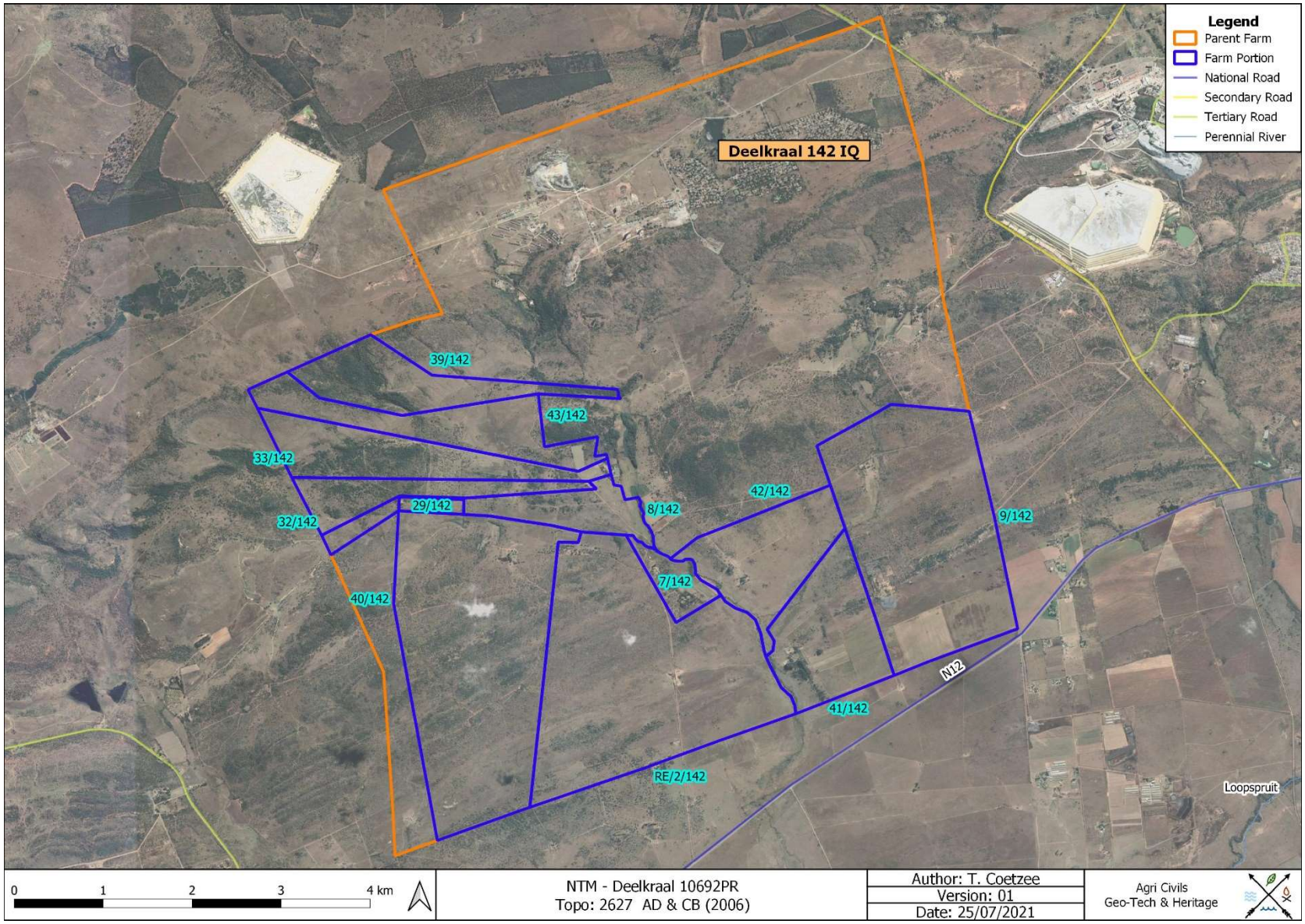

Figure 4: Proposed prospecting area portrayed on a 2020 satellite image.

3. Archaeological Background

Southern African archaeology is broadly divided into the Early, Middle and Later Stone Ages; Early, Middle and Later Iron Ages; and Historical or Colonial Periods. This section of the report provides a general background to archaeology in South Africa.

3.1 The Stone Age

The earliest stone tool industry, the Oldowan, was developed by early human ancestors which were the earliest members of the genus *Homo,* such as *Homo habilis*, around 2.6 million years ago. It comprises tools such as cobble cores and pebble choppers (Toth & Schick 2007). Archaeologists suggest these stone tools are the earliest direct evidence for culture in southern Africa (Clarke & Kuman 2000). The advent of culture indicates the advent of more cognitively modern hominins (Mitchell 2002: 56, 57).

The Acheulean industry completely replaced the Oldowan industry. The Acheulian industry was first developed by *Homo ergaster* between 1.8 to 1.65 million years ago and lasted until around 300 000 years ago. Archaeological evidence from this period is also found at Swartkrans, Kromdraai and Sterkfontein. The most typical tools of the ESA (Early Stone Age) are handaxes, cleavers, choppers and spheroids. Although hominins seemingly used handaxes often, scholars disagree about their use. There are no indications of hafting, and some artefacts are far too large for it. Hominins likely used choppers and scrapers for skinning and butchering scavenged animals and often obtained sharp ended sticks for digging up edible roots. Presumably, early humans used wooden spears as early as 5 million years ago to hunt small animals.

Middle Stone Age (MSA) artefacts started appearing about 250 000 years ago and replaced the larger Early Stone Age bifaces, handaxes and cleavers with smaller flake industries consisting of scrapers, points and blades. These artefacts roughly fall in the 40-100 mm size range and were, in some cases, attached to handles, indicating a significant technical advance. The first *Homo sapiens* species also emerged during this period. Associated sites are Klasies River Mouth, Blombos Cave and Border Cave (Deacon & Deacon 1999).

Although the transition from the Middle Stone Age to the Later Stone Age (LSA) did not occur simultaneously across the whole of southern Africa, the Later Stone Age ranges from about 20 000 to 2000 years ago. Stone tools from this period are generally smaller, but were used to do the same job as those from previous periods; only in a different, more efficient way. The Later Stone Age is associated with: rock art, smaller stone tools (microliths), bows and arrows, bored stones, grooved stones, polished bone tools, earthenware pottery and beads. Examples of Later Stone Age sites are Nelson Bay Cave, Rose Cottage Cave and Boomplaas Cave (Deacon & Deacon 1999). These artefacts are often associated with rocky outcrops or water sources. The LSA site, Fort Troje, is located just north of Cullinan and approximately 29 km south of the proposed prospecting project (Korsman et al. 1998: 95). **Figures 5 – 7** below shows examples of stone tools often associated with the ESA, MSA and LSA of southern Africa.

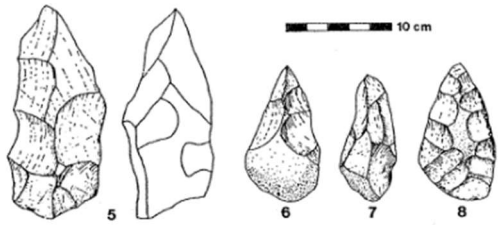

Figure 5: ESA artefacts from Sterkfontein (Volman 1984).

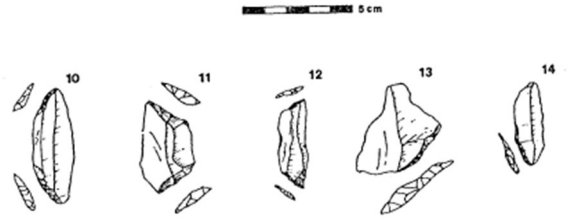

Figure 6: MSA artefacts from Howiesons Poort (Volman 1984).

Figure 7: LSA scrapers (Klein 1984).

3.2 The Iron Age & Historical Period

The Early Iron Age marks the movement of farming communities into South Africa in the first millennium AD, or around 2500 years ago (Mitchell 2002:259, 260). These groups were agro-pastoralist communities that settled in the vicinity of water in order to provide subsistence for their cattle and crops. Archaeological evidence from Early Iron Age sites is mostly artefacts in the form of ceramic assemblages. The origins and archaeological identities of this period are largely based upon ceramic typologies. Some scholars classify Early Iron Age ceramic traditions into different "streams" or "trends" in pot types and decoration, which emerged over time in southern Africa. These "streams" are identified as the Kwale Branch (east), the Nkope Branch (central) and the Kalundu Branch (west). Early Iron Age ceramics typically display features such as large and prominent inverted rims, large neck areas and fine elaborate decorations. This period continued until the end of the first millennium AD (Mitchell 2002; Huffman 2007). Some well-known Early Iron Age sites include the Lydenburg Heads in Mpumalanga, Happy Rest in the Limpopo Province and Mzonjani in Kwa-Zulu Natal.

The Middle Iron Age roughly stretches from AD 900 to 1300 and marks the origins of the Zimbabwe culture. During this period cattle herding appeared to play an increasingly important role in society. However, it was proved that cattle remained an important source of wealth throughout the Iron Age. An important shift in the Iron Age of southern Africa took place in the Shashe-Limpopo basin during this period, namely the development of

class distinction and sacred leadership. The Zimbabwe culture can be divided into three periods based on certain capitals. Mapungubwe, the first period, dates from AD 1220 to 1300, Great Zimbabwe from AD 1300 to 1450, and Khami from AD 1450 to 1820 (Huffman 2007: 361, 362).

The Late Iron Age (LIA) roughly dates from AD 1300 to 1840. It is generally accepted that Great Zimbabwe replaced Mapungubwe. Some characteristics include a greater focus on economic growth and the increased importance of trade. Specialisation in terms of natural resources also started to play a role, as can be seen from the distribution of iron slag which tend to occur only in certain localities compared to a wide distribution during earlier times. It was also during the Late Iron Age that different areas of South Africa were populated, such as the interior of KwaZulu Natal, the Free State, the Gauteng Highveld and the Transkei. Another characteristic is the increased use of stone as building material. Some artefacts associated with this period are knife-blades, hoes, adzes, awls, other metal objects as well as bone tools and grinding stones.

According to Bergh (1999: 104) Kwena and Kgatla communities are widely associated with the central Limpopo, North West, Gauteng and Mpumalanga Province. Although this distribution was disrupted by Mzilikazi's Ndebele during the "difaqane", these communities returned to their former areas afterwards. The main areas associated with the Kwena and the Kgatla included the area north of Pretoria in the vicinity of the Crocodile, Pienaars and Apies Rivers, the Magalieberg as well as in the surroundings of Brits, Rustenburg, Bela-Bela, Modimolle and the Pilanesberg and Waterberg. Apart from these localities, smaller Kgatla communities were located in what is today known as Botswana, while some Kwena communities were found near Ventersdorp, Mashishing, Soutpansberg and Middelburg.

The Historical period mainly deals with Europe's discovery, settlement and impact on southern Africa. Some topics covered by the Historical period include Dutch settlement in the Western Cape, early mission stations, Voortrekker routes and the Anglo Boer War. This time period also saw the compilation of early maps by missionaries, explorers, military personnel, etc.

3.2.1 Carletonville General History

Carletonville was named after the director of Consolidated Gold Fields, Mr Carleton Jones. The town was proclaimed in 1948 and on July 1, 1959 became a municipality (Bulpin 1986: 721).

3.3 Examples of Heritage Sites

Figures 8 – 15 are examples of heritage sites sometimes encountered – such areas should be avoided.

Figure 8: Example of undecorated potsherds.

Figure 9: Example of a decorated potsherd.

Figure 10: Example of a potential granary base.

Figure 11: Example of a stone-walled site.

Figure 12 : Example of a broken lower grinding stone.

Figure 13: Example of a dilapidated stone-walled site.

Figure 14: Example of a historical building.

Figure 15: Example of a potential informal grave.

3.4 Previous Heritage Studies

Portion 11 of the Farm Leeuspruit 184 IQ

A Cultural Heritage Resources Impact Assessment was conducted by Kusel (2008) on the Farm Leeuspruit 184 IQ near Fochville in the North West Province. The type of development is unknown, but it was noted that the study area used to be maize fields. The study recorded no sites of cultural significance. The demarcated impact area is located roughly 14 km east of the proposed National Treasure Minerals (Pty) Ltd project.

East and West Driefontein Mines

An Archaeological survey was conducted by Archaeological Resources Management (ARM) for the East and West Driefontein Mines located approximately 18 km east-northeast of the proposed National Treasure Minerals (Pty) Ltd project area. The study recorded MSA and LSA artefacts, as well as Iron Age stone-walled complexes. Accordingly, the Iron Age sites date to between AD 1650 and 1750. Some Historic sites consisting of loosely packed stones in a semi-circle formation, as well as square stone foundations were recorded. It was

noted that some of these structures might have been used as sangas (low windbreaks) during the Anglo-Boer War (Huffman et. al 1994).

Expansion of the Sun Valley Broiler Facilities

Pelser (2013) conducted a Heritage Impact Assessment for the expansion of the Sun Valley Broiler Facilities on the Remaining Extent of Portion 31 of the Farm Welgegund 375 IQ near Potchefstroom. The Sun Valley Broiler Project area is located approximately 28 km southwest of the proposed National Treasure Minerals (Pty) Ltd project area. The study recorded a number of stone age tools scattered in low frequencies over the area.

4. Evaluation

The significance of an archaeological site is based on the amount of deposit, the integrity of the context, the kind of deposit and the potential to help answer present research questions. Historical structures are defined by Section 34 of the National Heritage Resources Act, 1999, while other historical and cultural significant sites, places and features, are generally determined by community preferences.

A fundamental aspect in the conservation of a heritage resource relates to whether the sustainable social and economic benefits of a proposed development outweigh the conservation issues at stake. There are many aspects that must be taken into consideration when determining significance, such as rarity, national significance, scientific importance, cultural and religious significance, and not least, community preferences. When, for whatever reason the protection of a heritage site is not deemed necessary or practical, its research potential must be assessed and if appropriate mitigated in order to gain data / information which would otherwise be lost. Such sites must be adequately recorded and sampled before being destroyed.

5. Statement of Significance & Recommendations

5.1 Statement of significance

The study area: Several portions of the Farm Deelkraal 142 IQ, Gauteng.

As can be seen from previous research done in the area, the general region is significant from a heritage perspective. Heritage sites are likely to include Stone Age, Iron Age and historical sites. Since heritage sites, such as burial sites, are not always clearly identifiable due to disturbed/removed surface features, care must be exercised when prospecting.

The **Appendix A** figures indicate the study area on 1945 (partially), 1958 (partially), 1966 (partially), 1976 (partially), 1991 and 2006 topographical maps, as well as on 1961 aerial images, while **Table 2** lists the potential sites, type of site, location, estimated extent and current status as observed on recent satellite imagery. **Figures 16 & 17** indicate the identified potential sites and sensitive areas.

Twenty-seven potential sites were identified on the historical aerial images and topographical maps: two sites on the Remaining Extent of Portion 2, three sites on Portion 7, two sites on Portion 8, seven sites on Portion 9, one site on Portion 32, one site on Portion 33, one site on Portion 39, three sites on Portion 40, four sites on Portion 41 and three sites on Portion 42.

Three areas associated with buildings, six areas associated with huts and one area associated with ruins were observed on the topographical map dating to 1945 (**Appendix A: Figure 18**). Two of the building sites appear to be intact, while the remaining sites appear to have been demolished as no surface features are noted on contemporary satellite imagery.

The topographical map dating to 1958 (**Appendix A: Figure 18**) indicate the presence of three intact building sites. The remaining sites, consisting of one building site, six areas associated with huts, and three ruins, appear to have been demolished as no surface features are noted on contemporary satellite imagery.

When the 1961 aerial image is inspected (**Appendix A: Figure 19**), four areas associated with buildings are observed. Based on contemporary satellite imagery, two of these sites have been demolished.

The 20 demolished sites might be associated with subsurface culturally significant remains. It is also unknown whether the seven sites associated with intact buildings have been demolished and replaced by modern buildings. Should any part of the identified sites, whether on the surface or at a subsurface level, still exist, it would be at least 60 years old and would therefore be protected by the NHRA (National Heritage Resources Act) 25 of 1999.

Table 2: Potential site location.

Site No	Type	Parent Farm	Farm Portion	Current Status	Estimated Extent (ha)	Lat (y)	Lon (x)
B01	Hut	Deelkraal 142 IQ	RE_2	Demolished	2.7	-26.505416	27.310130
B02	Hut	Deelkraal 142 IQ	41	Demolished	1.4	-26.510649	27.325033
B03	Building	Deelkraal 142 IQ	41	Demolished	2.5	-26.509116	27.325435
B04	Ruin	Deelkraal 142 IQ	41	Demolished	1.2	-26.505735	27.326627
B05	Hut	Deelkraal 142 IQ	41	Demolished	2.4	-26.504921	27.332086
B06	Hut	Deelkraal 142 IQ	9	Demolished	2.0	-26.501121	27.339623
B07	Hut	Deelkraal 142 IQ	9	Demolished	0.9	-26.500639	27.346939
B08	Building	Deelkraal 142 IQ	42	Intact	2.6	-26.501898	27.320818
B09	Hut	Deelkraal 142 IQ	7	Demolished	1.4	-26.504066	27.313339
B10	Building	Deelkraal 142 IQ	7	Intact	1.7	-26.502337	27.312454
B11	Hut	Deelkraal 142 IQ	39	Demolished	1.4	-26.483036	27.301020
B12	Building	Deelkraal 142 IQ	33	Intact	0.9	-26.490946	27.307234
B13	Hut	Deelkraal 142 IQ	8	Demolished	1.9	-26.494067	27.305984
B14	Hut	Deelkraal 142 IQ	32	Demolished	1.2	-26.493342	27.301460
B15	Ruin	Deelkraal 142 IQ	8	Demolished	5.6	-26.494657	27.301088
B16	Hut	Deelkraal 142 IQ	40	Demolished	1.5	-26.498253	27.293619
B17	Hut	Deelkraal 142 IQ	40	Demolished	1.3	-26.498714	27.296030
B18	Building	Deelkraal 142 IQ	RE_2	Intact	4.7	-26.499670	27.304108
B19	Hut	Deelkraal 142 IQ	42	Demolished	2.1	-26.498553	27.316510
B20	Ruin	Deelkraal 142 IQ	9	Demolished	1.7	-26.499169	27.333113
B21	Ruin	Deelkraal 142 IQ	9	Demolished	0.8	-26.494234	27.330490
B22	Building	Deelkraal 142 IQ	9	Intact	1.7	-26.491105	27.334032
B23	Building	Deelkraal 142 IQ	9	Demolished	1.8	-26.485904	27.336767
B24	Building	Deelkraal 142 IQ	40	Intact	0.6	-26.500170	27.297632
B25	Building	Deelkraal 142 IQ	7	Intact	0.8	-26.500329	27.311637
B26	Building	Deelkraal 142 IQ	42	Demolished	0.5	-26.499606	27.317726
B27	Building	Deelkraal 142 IQ	9	Demolished	1.1	-26.501602	27.336398

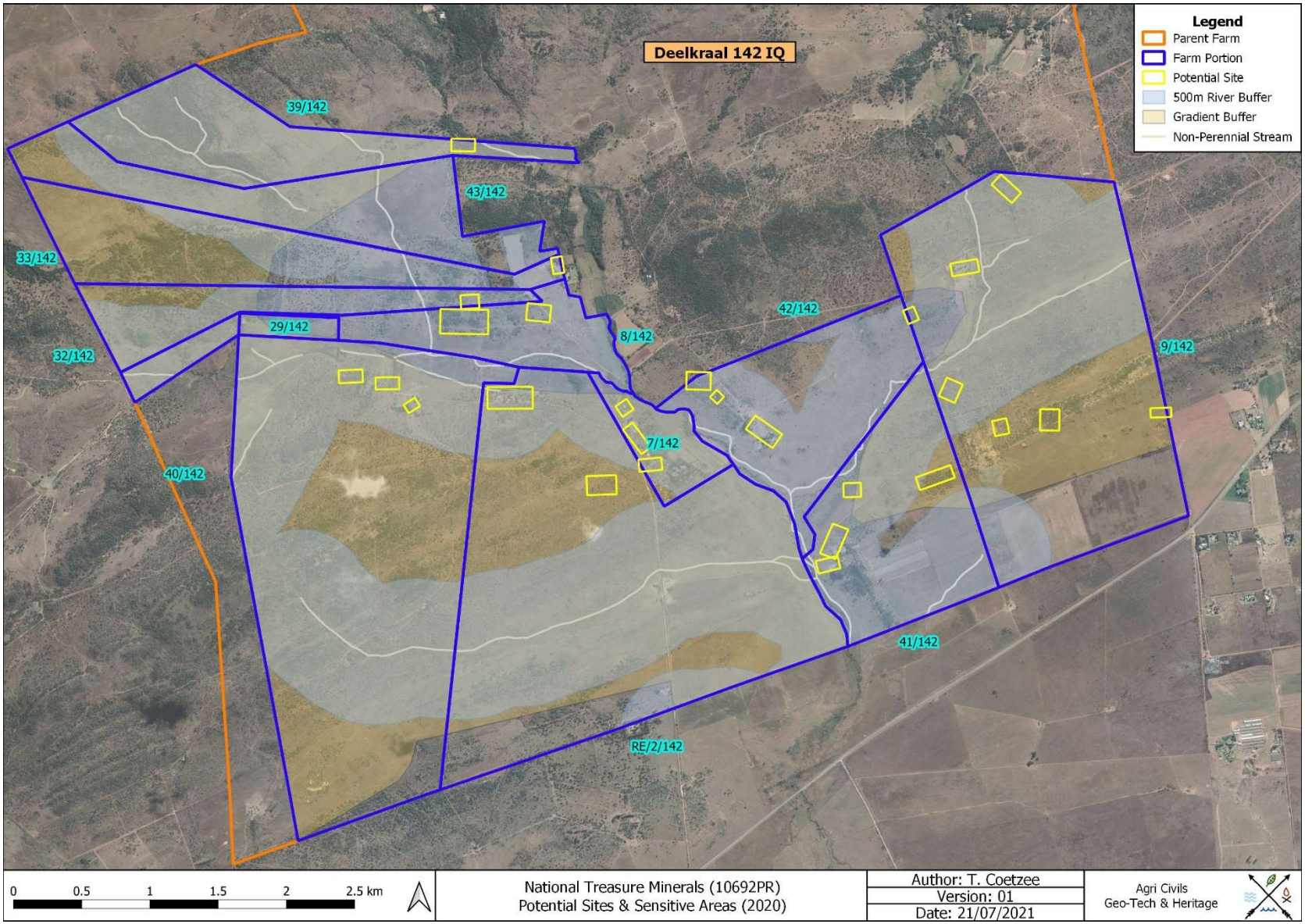

Figure 16: Potential Sites & Sensitive Areas.

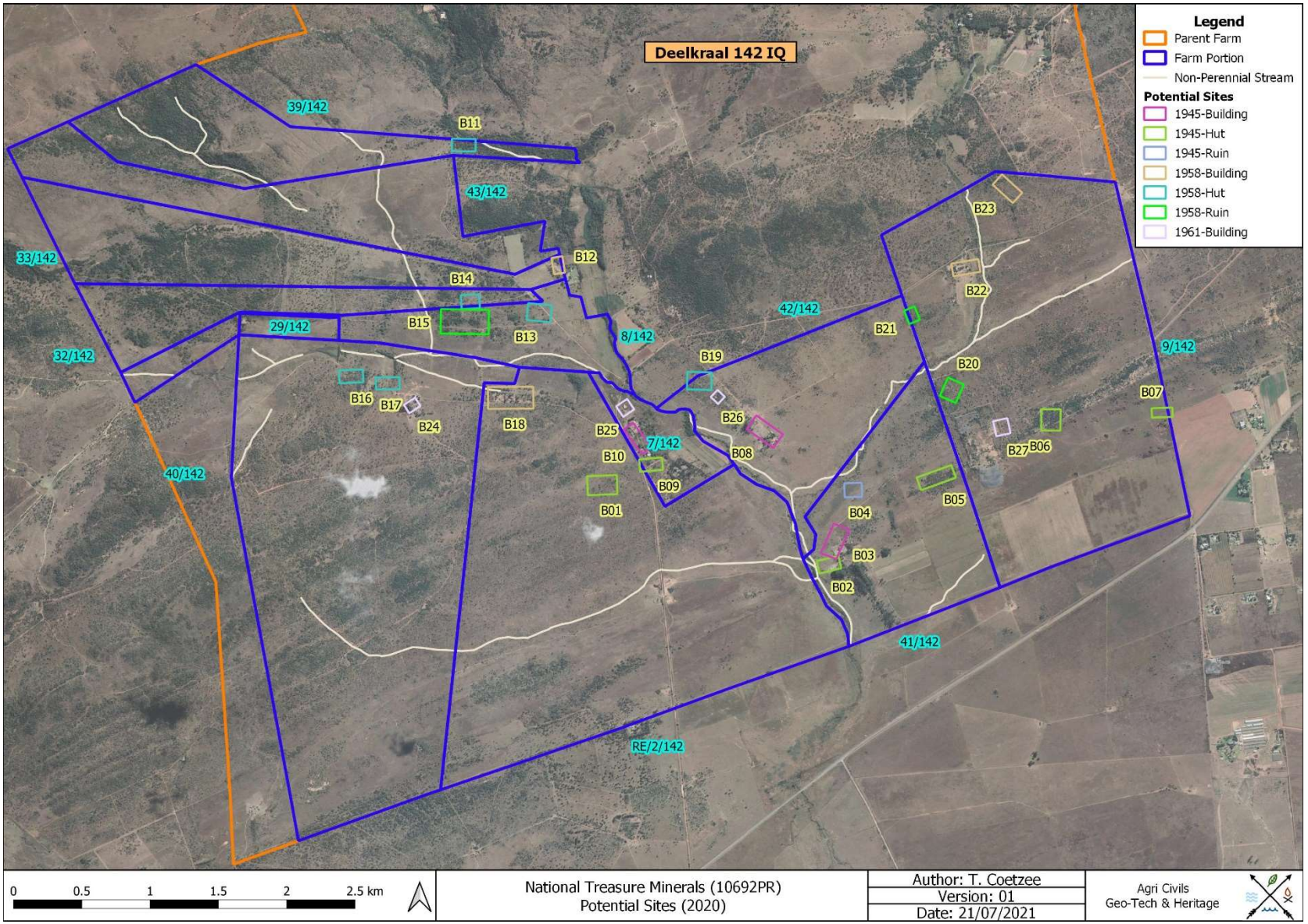

Figure 17: Potential Sites.

5.2 Recommendations

The following recommendations are made in order to avoid the destruction of heritage remains within the area demarcated for prospecting:

- Although the 20 demolished sites (**Table 2**) appear not to be associated with surface remains, subsurface culturally significant material might be present. Therefore, it is recommended that these sites be avoided by the proposed prospecting activities. Should this not be possible, a qualified archaeologist should be present on-site during prospecting in order to limit potential impact on heritage resources.

- The seven intact sites (**Table 2**) might be of cultural significance as the possibility exists that the associated buildings and structures exceed 60 years of age. It is therefore recommended that these areas be avoided by the proposed prospecting activities. Should this not be possible, a qualified archaeologist should be present on-site during prospecting in order to limit potential impact on heritage resources.

- The 500 m buffer zone surrounding the non-perennial streams is potentially sensitive from a heritage perspective. Care should be exercised when prospecting in this vicinity.

- The gradient buffer zone that is associated with steep contours is potentially sensitive from a heritage perspective. Care should be exercised when prospecting in this vicinity.

- It is advised that a qualified archaeologist be contacted whenever uncertainty regarding potential heritage remains exists.

- Prospecting should not take place in the vicinity of stone cairns, potential burial sites, stone-walling, building ruins or any other heritage material or structures.

- Should the prospecting outcome result in further development or construction, a full Phase 1 Archaeological Impact Assessment must be conducted on the affected area if triggered. Also, a full Phase 1 AIA must be done should the cumulative impact of the proposed prospecting exceed 0.5 ha.

- Because archaeological artefacts generally occur below surface, the possibility exists that culturally significant material may be exposed during the prospecting phase, in which case all activities must be suspended pending further archaeological investigations by a qualified archaeologist. Also, should skeletal remains be exposed, all activities must be suspended and the relevant heritage resources authority contacted (See National Heritage Resources Act, 25 of 1999 section 36 (6)).

- From a heritage point of view, prospecting may proceed on the demarcated portions, subject to the abovementioned conditions and recommendations.

6. Addendum: Terminology

Archaeology:

The study of the human past through its material remains.

Artefact:

Any portable object used, modified, or made by humans; e.g. pottery and metal objects.

Assemblage:

A group of artefacts occurring together at a particular time and place, and representing the sum of human activities.

Context:

An artefact's context usually consist of its immediate *matrix* (the material surrounding it e.g. gravel, clay or sand), its *provenience* (horizontal and vertical position within the matrix), and its *association* with other artefacts (occurrence together with other archaeological remains, usually in the same matrix).

Cultural Resource Management (CRM):

The safeguarding of the archaeological heritage through the protection of sites and through selvage archaeology (rescue archaeology), generally within the framework of legislation designed to safeguard the past.

Excavation:

The principal method of data acquisition in archaeology, involving the systematic uncovering of archaeological remains through the removal of the deposits of soil and other material covering and accompanying it.

Feature:

An irremovable artefact; e.g. hearths or architectural elements.

Ground Reconnaissance:

A collective name for a wide variety of methods for identifying individual archaeological sites, including consultation of documentary sources, place-name evidence, local folklore, and legend, but primarily actual fieldwork.

Matrix:

The physical material within which artefacts is embedded or supported, i.e. the material surrounding it e.g. gravel, clay or sand.

Phase 1 Assessments:

Scoping surveys to establish the presence of and to evaluate heritage resources in a given area.

Phase 2 Assessments:

In-depth culture resources management studies which could include major archaeological excavations, detailed site surveys and mapping / plans of sites, including historical / architectural structures and features. Alternatively, the sampling of sites by collecting material, small test pit excavations or auger sampling is required.

Sensitive:

Often refers to graves and burial sites although not necessarily a heritage place, as well as ideologically significant sites such as ritual / religious places. *Sensitive* may also refer to an entire landscape / area known for its significant heritage remains.

Site:

A distinct spatial clustering of artefacts, features, structures, and organic and environmental remains, as the residue of human activity.

Surface survey:

There are two kinds: (1) unsystematic and (2) systematic. The former involves field walking, i.e. scanning the ground along one's path and recording the location of artefacts and surface features. Systematic survey by comparison is less subjective and involves a grid system, such that the survey area is divided into sectors and these are walked ally, thus making the recording of finds more accurate.

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Human Tissue Act No. 65 of 1983, Government Gazette, Cape Town

National Heritage Resource Act No.25 of 1999, Government Gazette, Cape Town

Removal of Graves and Dead Bodies Ordinance No. 7 of 1925, Government Gazette, Cape Town

Appendix A: Historical Aerial Imagery & Topographical Maps

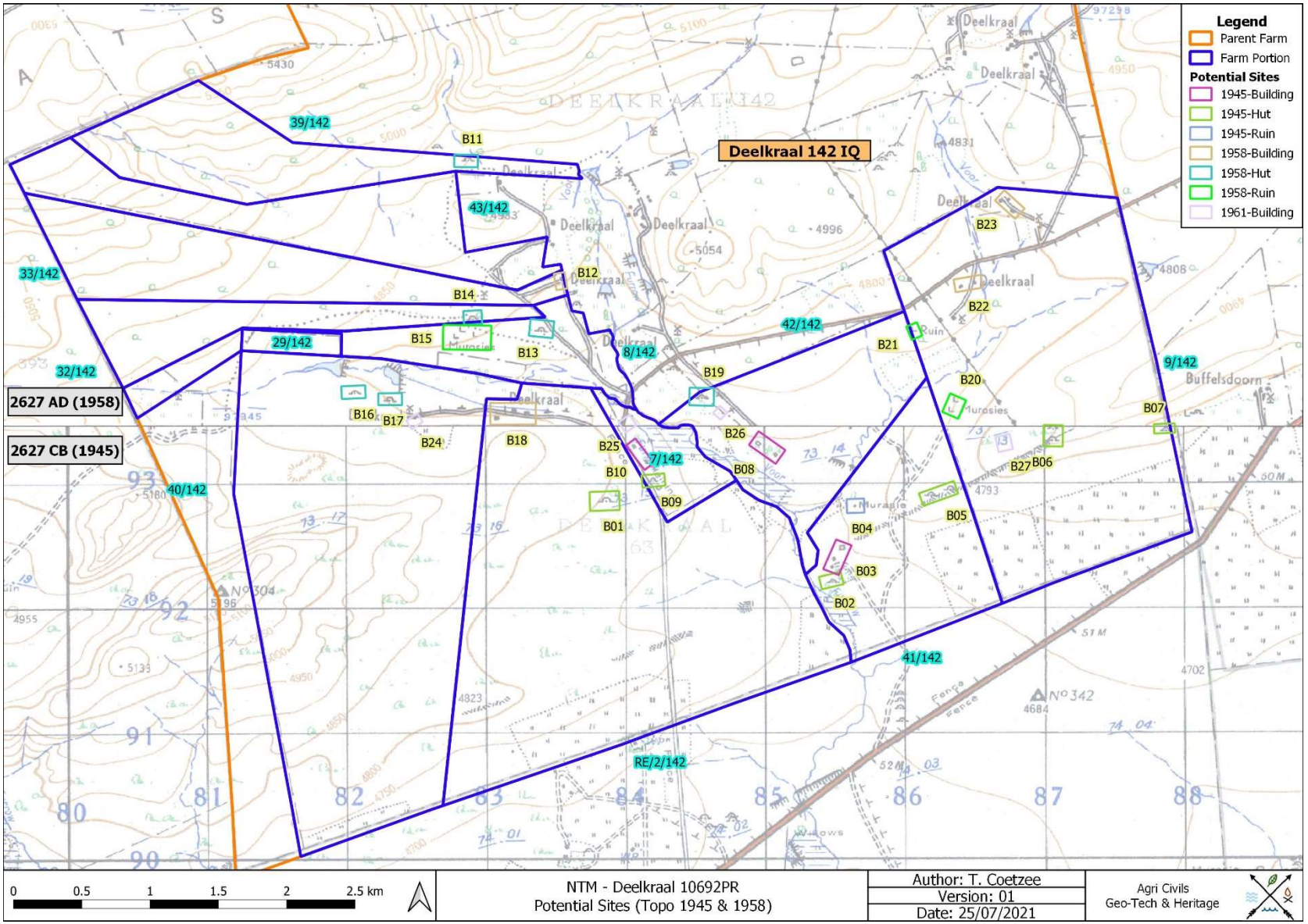

Figure 18: Segments of 1945 & 1958 1:50 000 2627 AD & CB indicating the study area.

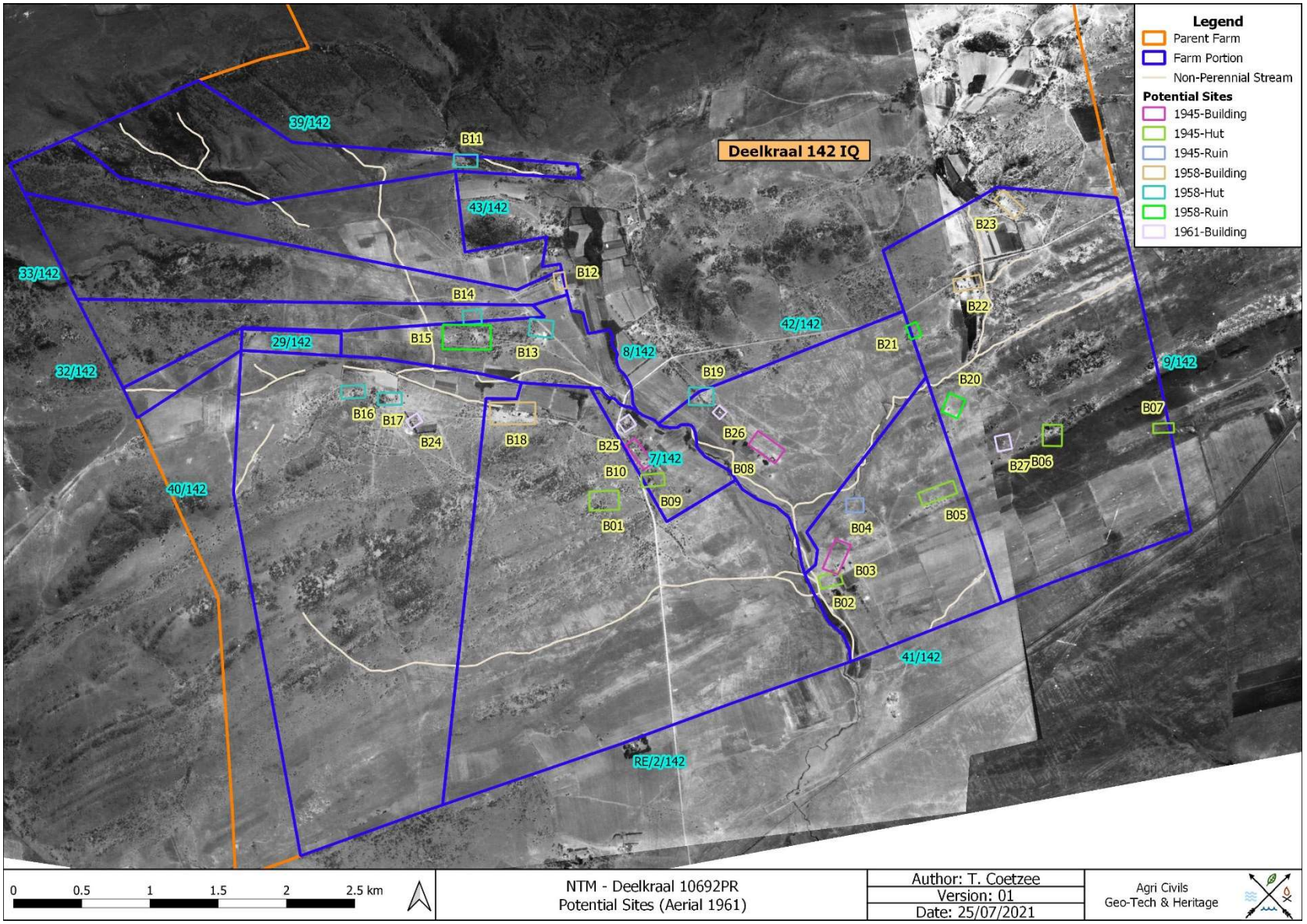

Figure 19: 1961 Aerial image of the study area.

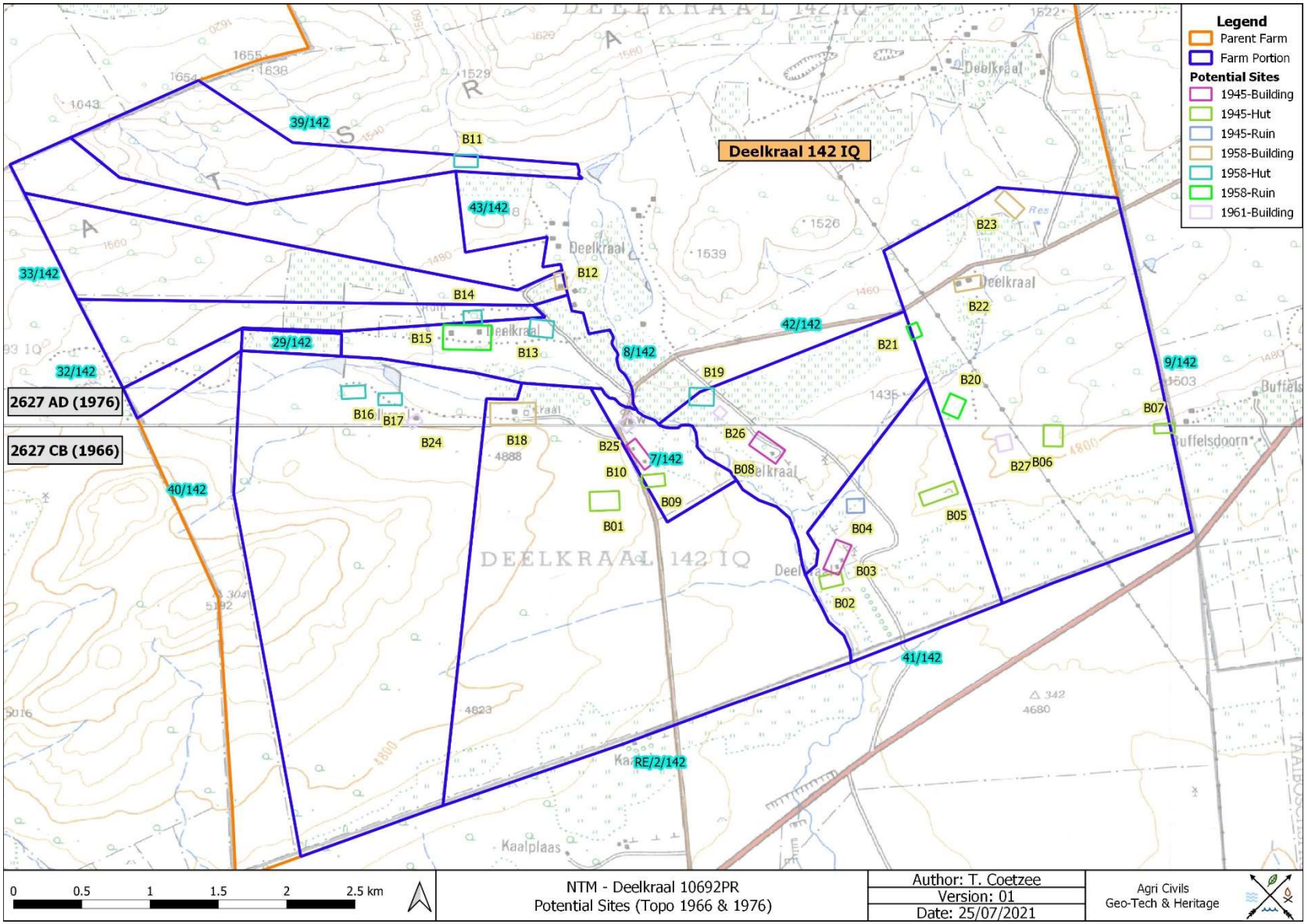

Figure 20: Segments of 1966 & 1976 1:50 000 2627 AD & CB indicating the study area.

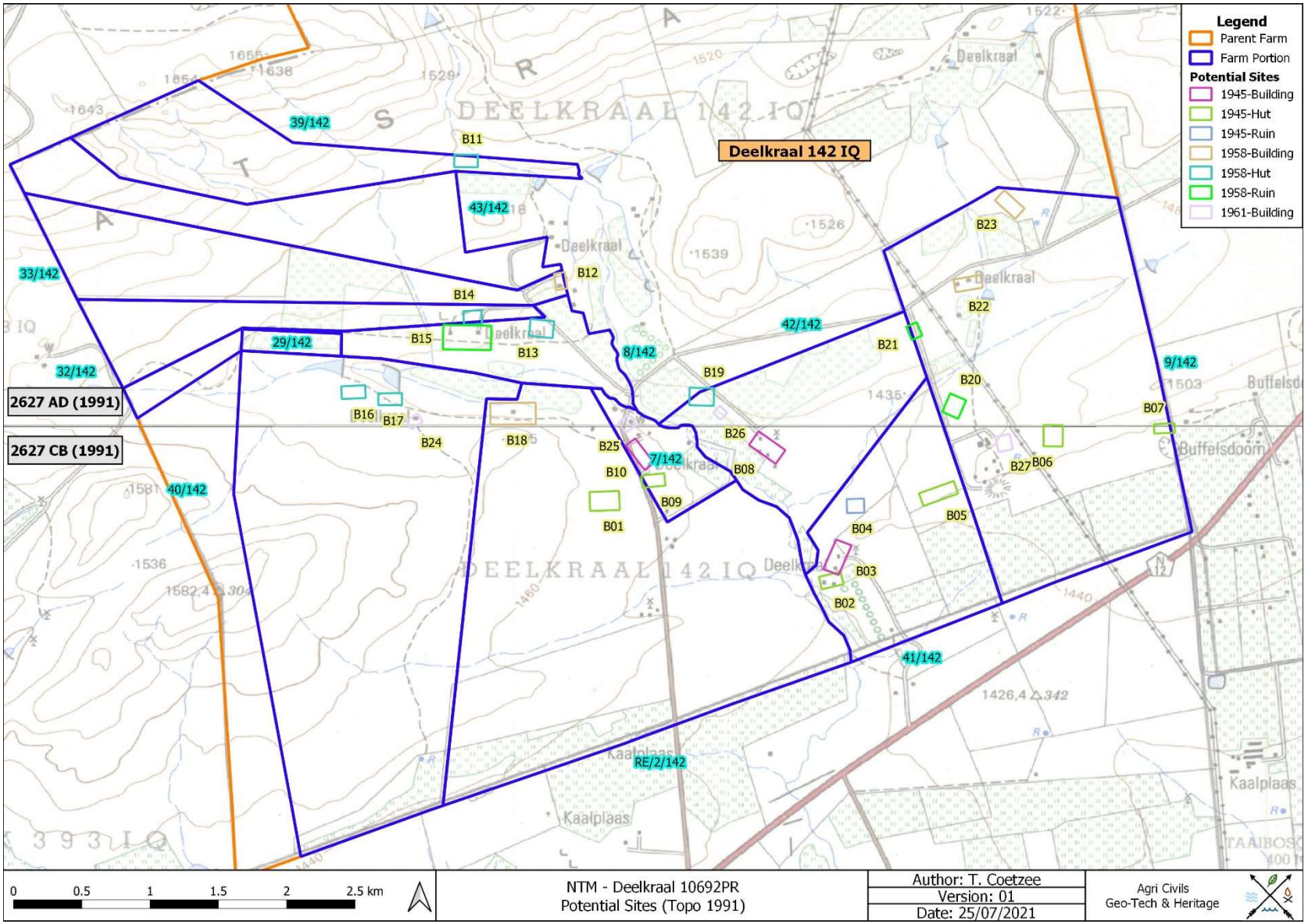

Figure 21: Segments of 1991 1:50 000 2627 AD & CB indicating the study area.

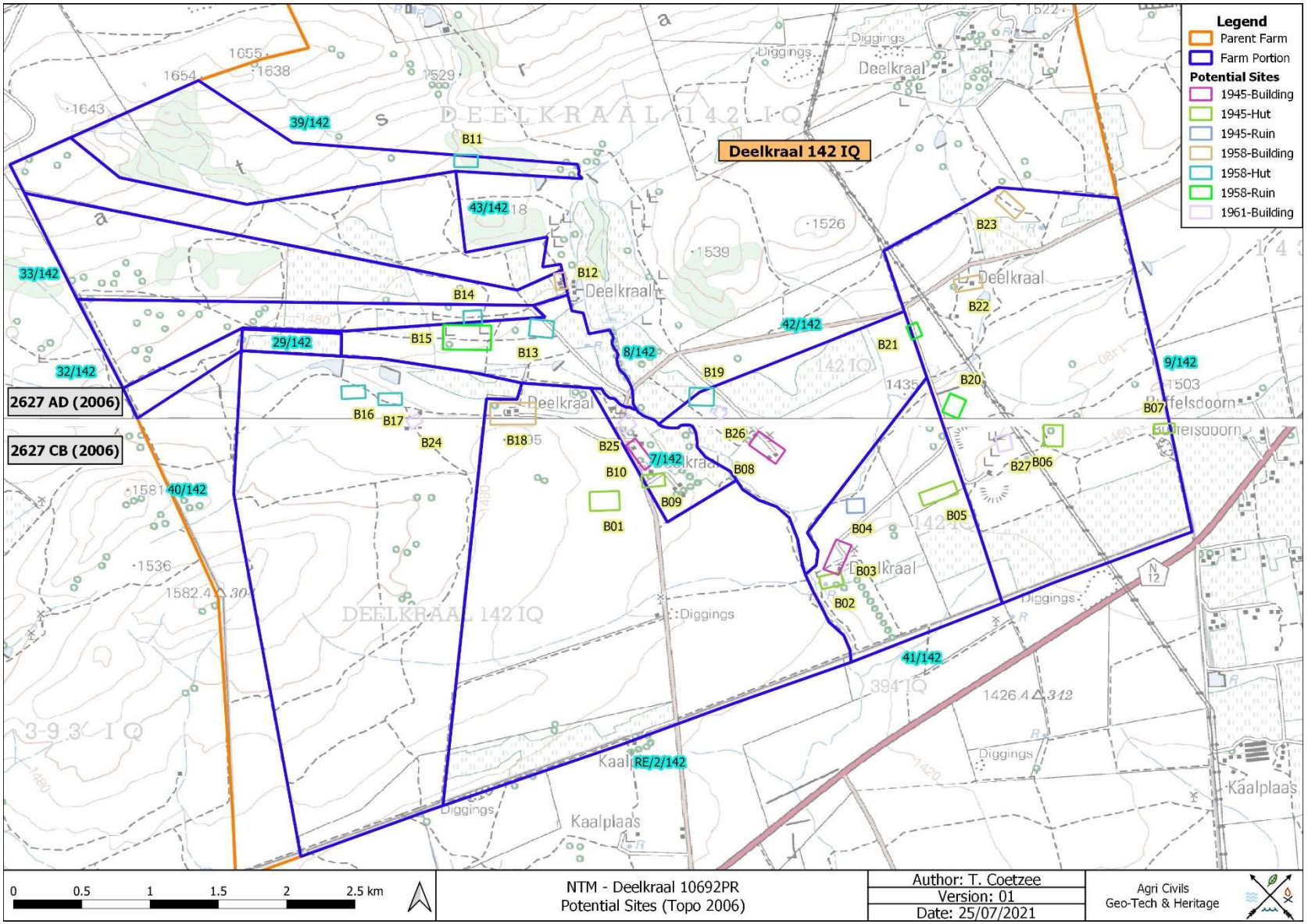

Figure 22: Segments of 2006 1:50 000 2627 AD & CB indicating the study area.